

July 1, 2021

Dear SEC Presiding Officer Evans and Subcommittee Members,

Thank you for the opportunity to submit comments limited to the scope, “the appropriate methodologies for measurement and analysis of sound, and procedure for validating noise complaints.”

I was the President of New Hampshire Wind Watch and actively involved in the legislation SB99, SB281 and SB245. These bills mandated changes to the SEC Statute and Rules, to increase transparency and make the SEC more accessible to the Public, while defining **more protective siting and compliance requirements**.

My initially written testimony is contained below but having attended and recorded the audio of the June 17th meeting, I feel compelled to highlight statements made by Antrim Wind’s noise expert, Robert O’Neal, as the dialogue speaks for itself.

In summary of the dialogue captured below:

- O’Neal admits he doesn’t know how quickly the human ear hears sounds.
- O’Neal admits the Lmax is similar to the 1/8th second interval.
- O’Neal highlights that he has interpreted the Rules to make the result fit the pre-construction modeling NOT performing the sound testing using the plain language of the Rules.

The previously sited wind facilities in NH were permitted with an Lmax standard (pre-2015). The purpose and intent of the Rules (adopted in 2015) and the Conditions of the Antrim Wind Certificate are to protect the health and safety of the people living in the vicinity of the wind facility NOT to prove out the faulty pre-construction modeling. Per the [Site and Certificate Order](#), “The Subcommittee finds that so long as the Project complies with the noise level requirements set forth in the rules, that it will not have an unreasonable adverse effect on health and safety. The Applicant demonstrated that it has the technical capacity to decrease the Project’s noise by curtailment or implementation of the Noise Reduction Operation Mode.”

Here is the Q&A between Committee member John Duclos and AWE’s sound expert Robert O’Neal from the June 17, 2021 public meeting (audio attached) with my comments italicized in brackets {}:

- When asked how quickly does the ear hear sounds, O’Neal responded, “Depends on an individual’s hearing. I don’t honestly know if I can tell 1/8th second, never been tested. ***I don’t have an answer for you***, unless dramatic change, very large change 10-20dB over a short period of time. 1-2dB change would not have an impact. *{the exceedances found*

by Rob Rand in the 1/10th intervals have been in the range of 8-13 dBA over the allowable noise standard, which explains the noise complaints.}

- Questioning regarding 1/8th second vs Lmax:
 - Duclos: And you said LAeq T .125 is unreasonable? It's doesn't make any sense at all because the data point can't be split?
 - O'Neal: Yes, correct.
 - Duclos: How is that different than the Lmax standard? Is Lmax a blip in time or is it an average standard?
 - O'Neal: **Lmax is not much different than the 1/8th second. Lmax is the highest sound level measured over same period of time. Lmax is short, instantaneous sound level** which goes against a reasonable sound standard.
 - Duclos: **You said LAeq .125 is equivalent to Lmax standard which is an unreasonable standard for a wind farm.**
 - O'Neal: **Yes. Lmax and 1/8th second could be a little different, not wildly off.** *{Lmax is the standard used by all other NH wind facilities. Obviously, it's not unreasonable!}*
 - Duclos: You also agree the Rules and Certificate don't have a compliance period assigned to the shall not exceed or dBA?
 - O'Neal: They did not include a time period.
 - Duclos: What is the reasonable time period they should have considered?
 - O'Neal: Minimum of 10 minutes to be the smallest time period, see it in a lot of other jurisdictions. A lot collect multiple 10 minute periods, a lot put in 1 hour time period. 10 minutes is the absolute minimum.
 - Chair Evans: 6 – 10 minute periods or 1 hour Leq?
- O'Neal's statement regarding the use of the 1-hour averaging as a means to achieve the pre-construction modeling threshold:
 - O'Neal: **The shorter the time period, the more unreliable. 1-hour standard showed good agreement with the pre-construction modeling, which is what we are trying to get here. Someone proposes a project, they know the Rules and how they have to meet the standard then having that 1-hour time period is going to be a better option.**

Additional statements/testimony from Antrim Wind's experts:

AWE's cross examination during pre-Certificate Adjudicative Hearing
https://www.nhsec.nh.gov/projects/2015-02/transcripts/2015-02_2016-09-22_transcript_adj_hearing_day4_morning.pdf - Page 68

Q: Okay. And you're obviously aware that the standard is a 40 decibel not-to-exceed figure, correct?

A. by O'Neal: Forty (40) at night, 45 during the day, yes.

{Clearly, O’Neal is fully aware of a ‘not-to-exceed’ standard and agrees with it. If there was an expectation of any averaging, why was that not mentioned? }

AWE’s Comments submitted during SEC Rulemaking:

<https://www.nhsec.nh.gov/projects/2014-04/documents/09-17-15-sec-2014-04-letter-eolian-renewable-energy.pdf>

{No reference to 1 hour averaging... no reference to averaging at all!}

Transcript from November 23, 2020 public meeting, when public NOT notified:

https://www.nhsec.nh.gov/agendas-minutes/documents/2015-02_2020-11-23_transcript_public_mtg.pdf

Page 56:

Tocci: “...**over I believe it was one hour that they -- or 10 minutes that was used by Acentech. I believe the IEC standard was 10 minutes. That throws into question, well, what is this 125-millisecond measurement all about?** ...And what it's related to is what is normally called "amplitude modulated sound." This is pulsing sound that sometimes occurs for a couple of reasons by wind turbines. And though it's not loud in itself, it is quite detectable and **could be a source of annoyance under certain circumstances**...And that's only a guess because that's what the 125-millisecond measurement may have been pointing to. **But it was not clear in the standard, in the original Site 301.18 standard, as to how to use that data.** It does exist, but it doesn't align with the other descriptors that were used throughout the program.

{Tocci seems to have no clue whether the Accentech report was based on 10 minute or 1 hour averaging. He refers to the ‘original Site 301.18’, there’s only been one Site 301.18... and he points out he didn’t know how to use it!}

Initial written testimony:

I participated on the SB99 Committee addressing health and safety concerns related to siting industrial scale wind turbines, which included wind turbine noise emissions. Our working group, which ultimately signed off on the Rules, included four acousticians including two that worked almost exclusively for the wind industry. The language that now appears in NH Site 301.18 was taken directly from the group’s final report.

The SEC Noise Standard:

The SEC noise standard codified in NH Site 301.14(f)(2)a requires that “A-weighted equivalent sound levels produced by the applicant's energy facility during operations **shall not exceed** the {greater of 45 dBA} or {5 dBA above background levels, measured at the L-90 sound level}, between the hours of 8:00 a.m. and 8:00 p.m. each day, and the {greater of 40 dBA} or {5 dBA above background levels, measured at the L-90 sound level}, at all other times during each

day...". Pursuant to NH Site 301.18(e)(6), all measurements are to be taken and reported in 1/8 second (0.125 second) intervals. The 1/8 second interval was intentionally selected by the stakeholder group that developed the rules to ensure that Leq measurements captured the amplitude modulation characteristically found in wind turbine noise. To further ensure there was no confusion regarding the Leq timeframe, the 1/8 second interval was given its own rule at NH Site 301.18(e)(6) which states "All sound measurements during post-construction monitoring shall be taken at 0.125-second intervals measuring both fast response and Leq metrics."

The Tocci Protocol:

The Tocci protocol assumes a noise standard and method of noise monitoring that is contrary to the SEC rules. In particular, the Tocci protocol assumes a 1-hour time interval (Leq 1-hour also referred to a 1-hour averaging). Given the variable nature of wind turbine noise, the Tocci protocol will result in filtering out most of impacting noise and potentially show compliance where there actual noise exceedances are occurring. When asked to provide the specific language relied on in the SEC rules to support a 1-hour interval, the SEC admin stated "Since Site 301 is not specific, Mr. Tocci recommended the hourly A-weighted equivalent sound level and the methodology as written in the protocol." The SEC Admin also admitted that the ANSI 12.9 standards upon which the rules are based do not dictate a 1-hour interval.

Conclusion:

Prior to 2015 and the adoption of the SEC rules, there was NEVER a time where the SEC imposed a turbine sound standard that allowed for 1-hour (or 10 minute) averaging of data. It is not reasonable to assume such a standard would be supported in the existing rules. Inserting an hourly average component into NH Site 301.14(f)(2)(a) significantly changes the standard adopted by the Committee. The rules are firm and are not subject to rewrite or interpretation, except through Rulemaking, by the Site Evaluation Committee. If the SEC admin or Mr. Tocci were unsure or questioned the meaning of the rules, the proper action would be to call a hearing of the Committee. Sound monitoring based on the proposed interval (1-hour averaging) WILL NOT detect any meaningful noise violations and therefore cannot be valid.

Sincerely,

Lori Lerner
Bridgewater NH